

OXYGEN BRIDGE STRUCTURES AND METHODS TO FORM OXYGEN BRIDGE STRUCTURES

Abstract of the Disclosure

A method is proposed for improving the adhesion between a diffusion barrier film and a metal film. Both the diffusion barrier film and the metal film can be deposited in either sequence onto a semiconductor substrate. A substrate comprising a first film, which is one of a diffusion barrier film or a metal film, with the first film being exposed at least at part of the surface area of the substrate, is exposed to an oxygen-containing reactant to create a surface termination of about one monolayer of oxygen-containing groups or oxygen atoms on the exposed parts of the first film. Then the second film, which is the other one of a diffusion barrier film and a metal film, is deposited onto the substrate. Furthermore, an oxygen bridge structure is proposed, the structure comprising a diffusion barrier film and a metal film having an interface with the diffusion barrier film, wherein the interface comprises a monolayer of oxygen atoms.

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